Ambient Solar UV Radiation and Seasonal Trends in Potential Sunburn Risk among Schoolchildren

**INTRODUCTION**

The detrimental effects of excess personal solar ultraviolet (UV) radiation exposure include sunburn, skin cancer and immune suppression. In South Africa, individuals with minimum natural protection from melanin, including fair-skinned individuals, African albinos and people spending extended periods outdoors and unprotected, especially during high solar UV radiation hours, are at risk of sunburn, a risk factor for skin cancer. Previous studies have shown that children are exposed to potentially high, sunburn-causing solar UV radiation levels during school hours. To intervene effectively, baseline information on patterns of potential schoolchild sunburn risk in South Africa is required.

**AIM**

To estimate national potential child sunburn risk patterns using monitored ambient solar UV radiation levels for six sites in South Africa.

**METHODS**

The South African Weather Service monitors ambient solar erythemal UV-B radiation at six sites (Fig. 1) using UV Biometers (model 501) comprising a Robertson-Berger pattern UV radiation detector, digital recorder and control unit. The erythemal UV-B spectrum range closely mimics the McKinley/Diffey Erythemal Action Spectrum. Logged readings were converted into hourly MED (minimal erythemal dose) values (1 MED = 210 Jm⁻²). Using this definition, hourly MED values for each of the six stations were converted into hourly SED values, the international standard unit for expressing personal solar UV radiation exposure (defined as 1 SED = 100 Jm⁻²).

Ambient solar erythemal UV-B radiation data for 2006 were applied in this study, since this annual dataset is the most recent and complete set for all six geographical sites. Ambient seasonal trends were calculated and then applied to estimate potential schoolchild solar UV radiation exposure by skin type using the reported 5% of the total daily ambient solar UV radiation.²³

**RESULTS AND DISCUSSION**

Schoolchildren with sensitive skin may experience sunburn during spring, summer and autumn months across South Africa and targeted intervention is needed.

**CONCLUSION**

While sunburn risk depends on schoolchildren's skin type and the season, as well as sun protection, timing and duration of exposure, and nature of activity, these results will help inform messages aimed at schoolchildren, schoolteachers and parents/caregivers in skin cancer prevention and sun protection awareness campaigns.

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**REFERENCES**